Anthropogenic dark earths in the Landscapes of Upper Guinea, West Africa: intentional or inevitable?

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Drawing on the recent identification of 'Anthropogenic Dark Earths' (ADE) in West Africa's Upper Guinea forest region, this paper engages with Amazonian debates concerning whether such enriched soils were produced 'intentionally' or not. We present a case study of a Loma settlement in North West Liberia in which ethnography, oral history and landscape mapping reveal subsistence practices and habitus that lead African Dark Earths (AfDE) to form 'inevitably' around settlements and farm camps. To consider the question of intentionality and how the inevitability of AfDE is experienced, we combine historical and political ecology with elements of non-representational theory. The former show how the spatial configuration of AfDE in the landscape reflect shifting settlement patterns shaped by (a) political and economic transformations, mediated by (b) enduring ritual practices and social relations between 'firstcoming' and 'latecoming' social groups that are symbolically related as 'uncles' and 'nephews.' We use non-representational theory to show how the Loma phenomenological experience of these soils and their origins is better conceptualized in terms of 'sensual objects' whose formation is inflected by these social and political processes. We thus reframe the debate away from intentionality, to theorize enriched anthropogenic soils and landscapes in terms of shifting socio-cultural, political and historical factors interplaying with the practical, sensually experienced and 'inevitable' effects of everyday life.

Keywords: Political Ecology; Historical Ecology; Non-Representational Theory; Phenomenology; Speculative Realism

Introduction: Towards a historical-political ecology of anthropogenic landscape formation

The study of anthropogenic landscape features such as soils and vegetation and the practices associated with their formation has animated far-reaching debates in both historical ecology (HE) (Heckenberger et al. 2003; Balée 2006; Erickson 2010) and political ecology (PE) (Crifasi 2005; Dull 2008; Sletto 2010). Central questions include the extent to which landscapes are 'pristine' or 'domesticated,' and the associated questions of the time-depth and magnitude of human environmental impact (whether 'degrading' or 'enriching') – which, when scaled up, resonate with central questions in the burgeoning field of research surrounding the new concept of the Anthropocene (Ellis et al. 2013; Erlandson 2014). One unresolved debate concerns whether or not anthropogenic dark earths (ADE) - fertile human-made soils best known as a legacy of Native Amazonian settlements of the late pre-Columbian period (Heckenberger and Neves 2009:9) - were made 'intentionally' for the purposes of farming, and what socio-historical patterns shaped their formation (see Woods and McCann 1999; Arroyo-Kalin 2011; Schmidt et al. 2014). This debate speaks to wider questions in HE and PE. The biophysical processes leading to the formation of these soils are largely known. They form through high-intensity depositions of organic and inorganic matter including biomass wastes, manure, bones, ash, charcoal and ceramics (Glaser and Birk 2012). They are enduringly fertile also in part due to their historical enrichment in highly stable black carbon, which has a half-life in the order of 1000 years (Kuzyakov et al. 2009), and they exhibit much higher levels of chemical elements essential for plant growth, such as phosphorous, calcium, magnesium, zinc and manganese, than the weathered and infertile soils in which they were formed. Yet we know little of the social context of ADE formation because this was obliterated by the arrival of Europeans (and their diseases) and the

consequent decimation of Native Amazonian peoples. It is therefore almost impossible[1] to examine the social processes behind ADE as a form of landscape domestication or human environmental impact in Amazonia today, because these processes are apparently absent. However, the recent identification of analogous anthropogenic dark earths in West Africa - that are still forming - (Solomon et al. n.d.) reopens the possibility of exploring the role of intentionality, politics and social institutions in shaping anthropogenic landscape formation, and that is the purpose of this paper. We now briefly outline HE and PE, their similarities, differences, and scope for integration, before moving on to the rather thornier question of intentionality.

The study of Amazonian ADE and other anthropogenic landscape features in the region has been central to the development of HE[2]; the study of human-environmental relations and landscapes from a diachronic perspective amongst archaeologists, anthropologists and geographers (Crumley 1994; Balée 1998). The field of PE has also contributed research useful for the study of these soils. PE focuses on environmental issues as arenas for political struggle - how the agency of individual actors and social relations has shaped environmental practices at local, regional, and global scales (Blaikie and Brookfield 1987; Robbins 2012). The integration of historical and political ecology has often been implicit in works in both paradigms (e.g. Fairhead and Leach 1996; Carney and Rosomoff 2009). The field of environmental history has also long combined historical and political analyses (Grove 1997; Mann 2011; McNeill 2010), while some geographers have explicitly called for a historical-political ecology (Brannstrom 2004; Davis 2008). Historical political

[1] With the notable and important exception of extant ADE formation in Amazonia amongst the Kuikuru on the Upper Xingu River, Brazil (Schmidt 2013).

[2] Here we refer to the research program of historical ecology among anthropologists, archaeologists and geographers, whose most well known exponents include William Balée, Clark Erickson, Carol Crumley etc. We recognise that there is a separate strand of historical ecology emanating from ecology as a science-based framework for conservation and restoration (e.g. Szabó and Hédi 2011)

ecology has been defined as a "field-informed interpretation of society-nature relations in the past…how and why those relations have changed (or not changed) over time and space." (Offen 2004:21). These kinds of history often run counter to dominant colonial/western ideas and narratives about nature in the global south by revealing the often "invisible" histories of farmers and forest peoples and their relationships to the landscape (Fairhead and Leach 1996; Davis 2008:286).

There are important differences between PE and HE however. PE tends to privilege the preferences, motivations and social relations of people and groups over the historical–geographical contexts that shape these (Agnew 2011:322), and has been criticized for ignoring ecology (Walker 2005). HE, conversely, gives primacy to historical/geographic contexts by way of its central concern with anthropogenic landscapes. Anthropogenic landscapes are seen as complex *palimpsests* that make manifest the ongoing outcomes of long-term ecological interactions between human and non-human agencies - "a vertical or horizontal layering or stratigraphy of [anthropogenic] signatures and patterning etched on the surface of the earth, deep into the soil…or above the surface fixed in the layers of vegetation" (Erickson and Balee 2006:187). HE tends to neglect the effects of politics on the landscape, and typically represents anthropogenic landscapes somewhat teleologically: as the result of the intentional application of practices or technologies (Erickson 2003; Erickson 2008; Oliver 2008) without considering both the contingent effects of struggles between social actors, and the effects of ecosystem engineers such as ants, termites and worms, in shaping 'anthropogenic' landscapes (McKey et al. 2010). Combining PE and HE overcomes the weaknesses associated with each (lack of ecology in the former, lack of politics in the latter).

Exploring intentionality: non-representational theory, phenomenology, and ADE as a sensual object

A central question in the study of ADE soils in the Amazon concerns whether they were created *intentionally* by pre-Columbian farmers (Erickson 2003; Erickson 2008; Oliver 2008), or exist as a 'fortuitous consequence' or simply an 'artefact' of settlement patterns (c.f. Schmidt et al. 2014), now being misinterpreted as intentional pre-Columbian Native Amazonian agro-ecological practices. This debate concerning intentionality has been predicated on an epistemological and ontological position which, although important to both PE and HE, has its limitations. How are ADE perceived if they are an inevitable corollary of a particular way of life?

The language of environmental social science has usually been premised on a dichotomous relation between 'symbolic-like' culture and a 'thing-like' nature (e.g. Moran 2010). A human political/social/cultural (and intentional) world interacts with an extant (unintentional) nature (albeit recursively or dialectically reshaped by and reshaping society) (Biersack 1999:9; see also Ingold 2000). It is Cartesian through and through, and unable to resolve how the inevitable corollaries of our modes of existence are experienced. Non-representational theory and associated theoretical perspectives can help (Thrift 2007). These accept that much of everyday life is experienced as a pre-reflexive, pre-cognitive 'background' that lies 'beneath' or 'before' cognition. Action and meaning can come less from willpower, cognitive deliberation and positioning in a structuring symbolic order (as it must do in social constructionism) and more from their enactment in contingent practical contexts, via bodily and environmental affordances, dispositions and habits (Anderson and Harrison 2010:7). Such an approach has a deeper intellectual pedigree in phenomenology

which takes as its starting point the experience of 'perceiving in all its richness and indeterminacy' - not just that which is thought or spoken, but rather, *what comes before* (Kullman and Taylor 1958). Ideas such as 'ourselves' in relation to 'nature' are only a secondary product of reflexive thinking (Csordas 1990; 1994). But non-representational theory differs from phenomenology in that it displaces the human agent from the centre of analysis in favour of networks (following Latour 2005), 'meshworks', entanglements or assemblages (following DeLanda 2006) of humans and non-humans (e.g. Barad 2007; Morton 2010; Ingold 2011). This gives all things or objects an equal ontological footing, rejecting the idea that being exists only as a correlate between mind and world (e.g. if things exist, they do so only for us); a perspective known as 'correlationism' (Bogost 2012). Correlationism is characteristic of the majority of post-Kantian thought, including both social constructionism *and* phenomenology. These insights sit at the centre of a philosophical movement called 'speculative realism' (Bryant, Srnicek, and Harman 2011). Speculative realism radicalizes Husserlian phenomenology by rejecting its anthropocentrism, anti-realism and privileging of single human actors (Sparrow 2014). In order to turn this analytical lens on the relationship of people to ADE and the question of intentionality, we draw on speculative philosopher Graham Harman's notion of the quadruple object. He replaces Husserl's correlationist "intentional object" (Husserl 1931), with a multiplicity of possible **sensual objects** constructed of **sensual qualities** (which change through time, or by movement of the perceiver or the object) that we perceive or experience. Behind many possible sensual objects lies, pragmatically, a **real object**. Such 'real objects' exist as physical entities but we can only construct a multitude of 'sensual' versions of them based on what our senses tell us. The real object has **real qualities** but examination of these can only ever be a **speculative** endeavour, as we can't directly access them (Harman 2011). Non-representational theory focuses on how practices embedded in the background achieve stability and reproduce

themselves over time through the establishment of corporeal routines. This is analogous with Bourdieu's (1990) notion of habitus, which "effectively historicizes and politicizes phenomenological accounts of the 'background'"(Anderson and Harrison 2010:10).

Our historical-political ecology of ADE is thus grounded in non-representational theory with attention to *i*) the non-discursive background of action, whilst *ii*) displacing the anthropocentric primacy of the mind-world relationship with a phenomenology of the sensual object, and *iii*) using the notion of habitus to scale-up the background of everyday life to longer term historical and political processes.

Methodology

This article focuses on the social and political trajectories that shape anthropogenic landscape features among Gissima-Loma people in southern Lofa county, Liberia (Figure 1). Fraser built on the team's long experience researching the region's societies, histories and ecologies (Leach 1994; Fairhead et al. 2003; Fairhead and Leach 1996; 1998), conducting 9 months of fieldwork in Liberia between August 2010 and July 2011. In our initial survey in Bong, Lofa and Nimba counties in western Liberia we found widespread presence of fertile anthropogenic dark earths on upland areas associated with present or past human settlement, analogous to Amazonian *terra preta* (Glaser and Woods 2004; Lehmann et al. 2003; Woods et al. 2009). Unlike the Amazon, however, these 'African Dark Earths' (AfDE) are still forming today (Frausin et al. forthcoming). This preliminary survey was followed by five months residence in Wenwuta, a town of 250 people, approximately six kilometers south-west of the market town of Zolowo, in Zorzor district, Lofa County (Figure 1). In NW Liberia, "Town" refers not to size or number of inhabitants per se (although towns are generally larger), but rather to the number of social groups or "quarters" (see below). Towns always have more than one quarter, and are normally quite old (>100 years), which contrast

with “villages” that are formed from only one social group, are generally newer, and control less farmland.

We recorded oral histories from the majority of resident elders; 37 in total. Whilst we present only four of the most illustrative oral histories, these were triangulated with the full oral history dataset and other qualitative evidence drawn from existing ethnographies, informal interviews and participant observation of daily activities such as rice farming, palm oil production, cooking, and drinking *Raffia vinifera* wine in the evenings. We also draw on data from transect walks and participatory GPS in collaboration with key informants in Wenwuta and other settlements in the region, who mapped the edges of AfDE sites (towns, old town spots, villages and farm camps) by walking round them. We obtained prior permission to conduct the research from all informants interviewed, regional leaders, and officials of the Government of Liberia.

We begin by introducing the significance of AfDE and related vegetation in the regional context of the Upper Guinea forests, and then in Wenwuta and its surrounding landscape. Next we address the political ecology of anthropogenic landscape formation, drawing on case study data from the Wenwuta landscape. Finding that a key driver in the formation of anthropogenic landscapes is population density within circumscribed areas over time, we explore how regionally significant social institutions interact with political processes to shape settlement patterns and cultural resilience. We draw on ethnography, participant observation and the oral accounts of local peoples in Wenwuta and surrounding towns and villages. To understand anthropogenic landscape formation and the question of intentionality we: (a) used open interviews to explore how social, political and historical relations shape the spatial distribution and temporality of the settlement and subsistence practices through which soil enrichment occurs. We then (b) examine the ways in which the Loma actually experience their role in anthropogenic landscape formation through a phenomenology of the everyday –

194 the sensory world of growing and processing crops and their inflection by these structuring
195 processes – the 'goes without saying' part of life itself – by way of participant and behavioral
196 observations, and then; c) discern the habitus that everyday sensory practice forms over time,
197 drawing on oral histories. The final section elaborates key elements of continuity and change
198 in this historical-political ecology during the last 15 – 20 years of the Liberian civil war and
199 its aftermath, and we conclude by drawing out insights for Amazonia and political-historical
200 ecology more generally.

201

202 **Anthropogenic landscapes in the forests of Upper Guinea**

203

204 The western part of the Upper Guinea forest region is today settled by a range of speakers of
205 Atlantic and south-west Mande languages (d'Azevedo 1962). Mande language speakers
206 derived from the north (Dwyer 2006), an area today in the south of modern Mali, where local
207 people have shaped a savannah landscape dotted with anthropogenic vegetation patches
208 (Duvall 2011) similar to those of Guinea (Fairhead and Leach 1996), implying that
209 anthropogenic landscapes emerge at different points on the forest-savannah continuum. From
210 the 15th Century or before, and perhaps owing to a combination of climatic desiccation, the
211 breakup of the Mali Empire, and European trading and slaving influences on the coast,
212 Mande speakers settled in what is now the tropical forest belt in modern Sierra Leone, Liberia
213 and Guinea (Brooks 1989). These areas were already inhabited by Kwa and Atlantic speaking
214 peoples who either left or were incorporated into Mande groups. Some such as the Kissi and
215 Gola, retained their languages and identities. Overlying a complex and shifting set of ethno-
216 linguistic affiliations, the history of migration, settlement and political turbulence shaped the
217 emergence of social and political institutions and practices that, as d'Azevedo (1962, 1989)

has aptly argued, are better understood as regional phenomena than as associated with any particular 'culture' or ethno-linguistic group. These, as well as central dimensions of subsistence technologies and labor patterns, are broadly shared - albeit with local variations – by other peoples, such as those speaking Kpelle and Mano in Liberia (Bledsoe 1980; Murphy and Bledsoe 1987) Kissi and Toma in Guinea (Fairhead and Leach 1996; Paulme 1954; Hojberg 2007), and Mende and Kono in Sierra Leone (Leach 1994; Ferme 2001; Bledsoe 1980; Bledsoe 1984; Hardin 1993; Richards 1996) whose histories of inhabitation shape similar anthropogenic landscapes (Fairhead and Leach 1996; 1998).

The anthropogenic landscapes in Wenwuta region, as throughout the Loma and adjacent regions, are characterized by central villages or towns surrounded by homegardens and agroforests (common species include plantain and banana - *Musa* spp., taro - *Colocasia esculenta*, manioc *Manihot esculenta* and cacao - *Theobroma cacao*), and anthropogenic forest islands (Common species include korina - *Terminalia superba* and the cotton tree - *Ceiba pentandra*) beyond which lie upland swidden-fallow mosaics of rice fields and fallows. These are bisected by streams and swamps used for rice and adjacent lowlands for cacao cultivation, and paths leading to fields, other villages and towns, and beyond. This landscape is punctuated by farm camps or "kitchens" (which are inhabited for certain parts of the year when farm work is intensive), and "old spots" – the sites of abandoned villages, towns and farm camps.

AfDE in this part of Liberia – in broad commonality with other parts of the region surveyed (Sierra Leone, Guinea and Ghana) - consist of rings of deep (up to 2 meters) black anthrosol replete with charcoal (Figure 2), surrounding currently occupied or abandoned towns (Solomon et al. n.d.). Villages and farm camps are also surrounded with rings of anthrosol, though typically less deep and less dark than larger settlements, the simple outcome of much lower population density and length of inhabitation. Current and abandoned

towns and villages - most today with much lower population densities than in the past – are also associated with patches of anthropogenic forest (Fairhead and Leach 1996; Frausin et al. forthcoming), which form outer rings surrounding inner rings of AfDE and associated homegardens.

AfDE form through additions of three primary forms of charred organic material: *i*) charred wood from fires lit for cooking, palm oil, soap, and potash production and blacksmiths' forges; *ii*) charred palm kernel from oil production, and *iii*) charred organic byproducts from the production of potash (usually from the seed pods of *Pentaclethra macrophylla*, kola, silk cotton trees, and palm fruit heads), together with diverse organic material (e.g. rice straw, old *Raphia* thatch and cooking waste) (Frausin et al. forthcoming). Homegardens are established on these soils by women, and sometimes later converted into agroforests by men. These grade into "islands" of anthropogenic forest which are established around settlements, providing private space for initiation society activities; a windbreak; useful tree species, and historically, defense (Fairhead and Leach 1996). "Old town spots," feature AfDE soils and typically support agroforests: locals have long recognized the suitability of these sites for cacao (*Theobroma cacao*) and kola (*Kola nitida*), combined with diverse tree species, wild and domesticated, forming the upper storey. This has also been noted in the county of Nimba for cacao (Westphal 1987:42), and kola (Ford 1992). They may also be considered as "sacred groves" (Chouin 2009), since their clearance for agriculture is not normally permitted owing to the presence of ancestors' graves and areas for secret society activities, although the cultivation of tree crops may make the phrase "sacred agroforest" more appropriate. The oldest "mature" trees in the landscape are found not in surviving patches of "original" forest, but growing on old town spots and along old roads, where they are protected by cultural laws. AfDE also begin to form around the farm camps where families sometimes spend days or weeks on end, and when enriched with useful trees, these

farm kitchen gardens, too, become agroforests. Palm oil production pits are further loci for AfDE formation as large amounts of charred and organic byproducts from oil production are deposited there.

These anthropogenic landscapes - patches of AfDE and anthropogenic vegetation - are permeated with symbolic significance since they are the ongoing outcome of inhabitation trajectories begun by ancestors, continuing to the present day. They are not simply areas of improved soils and anthropogenic- and agro- forests, but the relics of old towns, villages and kitchens, graveyards and initiation society areas, many of which were inhabited by direct ancestors of current inhabitants. Such ancestry is a critical component of contemporary land-tenure systems. It is through their claims to kinship ties with ancestors that those alive today claim rights. We now turn to the social institutions that underpin anthropogenic landscape formation.

A political ecology of Mande anthropogenic landscape formation

Settlement and domestic and farming patterns are key to the formation of anthropogenic landscapes and these patterns are fundamentally intertwined with social institutions that have enabled continuity and resilience in the habitus of anthropogenic landscape formation. Two aspects of social and political life and institutions in the region are of particular importance in explaining the political history of the distribution of these anthropogenic landscapes: the relationship of kinship/residential groups to one another, especially how they have joined together as enduring towns, and the specific mechanism of their conjoining: the '*kEkE-daabe*' relationship. Loma society is partitioned into 'wife-giving' (*kEkE*) and 'wife-

receiving' (*daabe*) groups. Wife-giver and wife-receiver categories also apply to perpetual relationships between landowners and latecomers, political authorities and ritual specialists, and lineage groups allied through ritual collaboration (Leopold 1991; Hojberg 2007). It is through the *kEkE-daabe* institution that immigrants settle and obtain land in new areas, by marrying daughters of existing landowners, and in the process becoming subordinate to them. This can be associated with matrilocal residence, since women stay with their families, although other factors including wealth and lineage status also shape residence. Marriages of men from contextual 'firstcomer' lineages, including chiefly and landowning lineages, are usually associated with virilocal residence, with the husband residing with his natal kin and a wife moving to join him. Polygyny is permitted and men whose families are able to pay the required brideprice may acquire several wives. It is through such marriages that 'latecomers' – immigrant stranger men - settle in their wife's community or locality and gain access to land, which is given to them so they can "make a farm to feed her." The immigrant man and his descendants come to constitute a new sub-lineage which may come to be associated with a new town quarter, or a new village in the locality. The social groups associated by this foundational marriage become structurally linked as maternal uncle (firstcomer/landowner) and nephew (latecomer/settler). The significance of such uncle-nephew kinship/residence ties extends throughout the region (Murphy and Bledsoe 1987). The social groups associated through these uncle-nephew ties are referred to by Loma people as "quarters" in Liberian English. This term does not just connote the residential area of a town associated with a particular group, but the group itself - with common origins, ancestry, kinship and tenurial links with certain areas of the land. Within a town, each quarter has its own chief, food taboo, and role within the town's political structure. The quarter that founded a town is the landowner, while other quarters may traditionally provide individuals for certain political roles, such as town chief, or different initiation society roles. Each quarter of a town normally

has one or more old town spots where its ancestors used to reside. Tracing the history of quarters, as we now go on to do, reveals how towns come together, how old town spots (abandoned towns, villages and farm camps) relate to existing quarters, and how land tenure in the areas surrounding modern towns reflects the historical claims of different quarters for their arrival in and movement through the landscape.

The town of Wenwuta (pop. ca.250) is formed by three quarters, Duala, Zelema and Delema (historically there was a fourth, now defunct quarter called Bekame, and possibly a fifth quarter, comprised of Belle slaves), each occupying a separate area of the town. Oral histories relate that Duala is the quarter that founded the town, and are thus the landholders. Exactly where Duala people moved from is unclear. While some claim that an old town spot close to Wenwuta is Duala's old spot, more claim it is an old spot of Wenwuta itself (Figure 3). In addition, Duala is said to have several old spots a few km south of the village of Beleziau. It is unclear from oral testimonies whether these were occupied before or after Wenwuta was founded, and by all or part of the Duala people. There are also two other old spots close to Wenwuta, each marked by a large cotton tree (one indicated as Duala old spot, the other known as Gbologizzima, Figure 3). According to the oral histories however, these are "hiding places" rather than settlement sites, which seems to be accurate, since these places lack AfDE, which characterizes all sites where settlements once existed. In addition, in the Duala farmland close to Wenwuta (Figure 3), a sacred forest marks the site of a historic "zóo graveyard," "zóo" referring to an important person in an initiation society (Murphy 1980). The Duala farmland itself, while the smallest area relative to that of the other quarters, is the best location for farming owing to its close proximity to Wenwuta, and because it encompasses the largest areas of fertile lowland soil.

Oral histories are suggestive of how the political history of Wenwuta's three quarters, and those of the towns of Tinsue, Fasewalezu and especially Zolowo, have shaped the current

distribution of AfDE and current land tenure in the landscape surrounding Wenwuta. The history of movement and settlement of these different groups created a series of abandoned AfDE sites at old town and village spots, located in areas of farmland associated with each group, dotted with much smaller-sized AfDE at farm camp-kitchen spots (Figure 3). The region had been occupied by other peoples (Barlain-Kpelle and Belle) before the Loma arrived and some accounts suggest that the landholding Duala quarter may have both Barlain-Kpelle and Loma origins. Wenwuta lands used to be inhabited by Barlain-Kpelle speakers, who now reside in territory to the south. Incoming Loma men married Barlain-Kpelle women and thus acquired a claim to land. A large old spot close to Wenwuta (called Famene, meaning "hear-hear" in Kpelle (Memene in Loma) (Figure 3) was also an old Barlain-Kpelle town – named as a place where people met and discussed issues. The fact that Duala have several old spots in ancestral Kpelle territory supports local people's assertions that *i*) their presence in the region predates the other quarters and *ii*) they were somehow more autochthonous than the other quarters, since their quarter identifies with multiple old town and village spots in the region, whereas the other quarters each supposedly came from a single, identifiable old spot, *iii*) they have ancestry in Loma men and Kpelle women.

Two other quarters, Zelema and Delema, each identifying with a single old spot (Figure 3) joined Duala to form Wenwuta. There is no agreement among Wenwuta people as to whether Zelema or Delema arrived first, but most elders agree that the cause was the "tribal war" an indistinct period in the 18th and 19th centuries characterized by endemic warfare (see Fairhead et al. 2003). Delema quarter has the biggest old spot that we visited in Liberia, some 5 hectares in size, most of which is covered in AfDE, suggesting that Delema must have been an important town. A higher level chief for the district (known as the General Town Chief) recalled that his ancestors had to speak to Delema chiefs in order to ask permission to settle in the region. According to him, Delema was one of the only towns in the

region at that time and some claim that Delema is the rightful landholder for Wenwuta land. Today Delema controls the "zóo business" [initiation society] in Wenwuta, and the leading zóo traditionally comes from this quarter. Zelema is the third, and largest Wenwuta quarter, whose old spot is located to the east. The town chief of Wenwuta traditionally comes from Zelema. Wenwuta is now surrounded by other Loma villages that all trace their origins to the Fisebu quarter of the market town of Zolowo six kilometres north-east of Wenwuta (Figure 3). Fisebu was a catch-all quarter for strangers arriving at Zolowo who, having problems finding land to farm, married daughters of Wenwuta and gained land there. This was the case for the founder of five villages (Beleziau, Bacurtazi, Gbokolomie, Dadazu, Dapada, Figure 3). Wenwuta chiefs welcomed strangers, attracting men for farming and defense and ensuring their loyalty through marriage and the *kEkE-daabe* relationship. Wenwuta [Duala quarter] remains the symbolic landowner.

Contemporary land tenure at Wenwuta is shaped by the history of each quarter. Today Delema people all farm in the same area of land, and control the old spots located within it (Famene and Bacurtazi) (Figure 3). As one elder stated: "Delema people farm together in that area of land since that is the direction that the town quarter faces. They make farms on Bacurtazi side because they and Bacurtazi were one people." It is claimed that Bacurtazi was established when a woman from the Delema quarter married a man from Zolowo. Delema people had been farming in the Bacurtazi area before the town was established, and the man from Zolowo decided to found the village in this area. Bacurtazi was abandoned within living memory, and its inhabitants then moved to a new spot nearby which, after being a village for decades, is now reduced to four farm kitchens after being destroyed during the war. The other old spot located beside Bacurtazi, Famene, is a Kpelle old spot, and therefore so ancient as to have been long abandoned even in oral histories. The actual Delema old spot is not located in current Delema quarter farmland but is actually now under the authority of the chief of a

nearby village, Karwalawuta (Figure 3) that was founded in 1963. The chief's father, who had been living in Monrovia, gained access to the old spot by marrying a woman from Wenwuta, and then sought permission to plant cacao, kola, coffee, banana and orange trees there. Zelema old spot similarly came to be controlled by an outsider who married a woman from Wenwuta, and lies beyond Zelema quarter's current farmland.

While most of the men claimed that the three quarters that make up Wenwuta today came together to defend themselves during the "tribal war," two elder women, independently of one another, claimed that Wenwuta came first, but people abandoned the town to establish the old spots to escape forced labor. Elders recall a period when soldiers with red hats and khaki trousers came and demanded that locals serve as porters for them. These were members of the Liberian Frontier Force that the Americo-Liberian state established to extract hut tax and labor from the Loma, which weighed especially heavily on Wenwuta as it was then on a main path to Monrovia. This exaction was greatly resented and people hid at old spots (or left the area entirely). So if these old spots did indeed predate Wenwuta, they were not totally abandoned even after its establishment, continuing as villages, farm camps, and places of refuge.

Hence, while broader political and economic forces and the conflicts associated with them have shaped and re-shaped the spatiality of anthropogenic landscape formation, the effects are generally configured by (and recalled within) underlying social institutions. The fundamental Loma settlement, domestic and farming patterns that shape anthropogenic landscape formation are thus robust and resilient in the face of change. As we have already seen, these patterns survived the 'tribal wars' of the 18^{th}-19^{th} centuries and attempts at forced labor by the Liberian state. They have also proved resilient in the face of more recent shifts in trade brought about by the formation of the Liberian state (which shaped politics, competition between settlements etc.) and the arrival of commercial coffee and cocoa farming in the

1940s and 1950s (when people began to use AfDE at old settlement sites for cocoa and coffee when before they had been reserved for kola, as described below). The pulses of gold and diamond mining, urban development and conflicts between the 70s and today drew some young men away, affecting labor supply for farming. While such political-economic changes do affect social relations, labor availability, land use, and the power relations within and between settlements, their effects on the spatiality of land use have been refracted through the same social institutions and have thus not disrupted the essential habitus of AfDE formation. Historical political-ecology here is configured by social institutions which bind diverse groups of people together as kin and move them to different spots of the land for different amounts of time and at different densities. This determines the intensity and time-depth of anthropogenic landscape formation at different locales. Settlements can, however, also be abandoned for aesthetic and phenomenological reasons, such as when they become too 'cold' (e.g. trees get too big) – a process we examine further below. We now turn to examine people's bodily, sensual and practical experiences of AfDE formation, and the habitus it forms over time.

How do people experience anthropogenic landscape formation?

In this section we summarize experiential dimensions of anthrosol formation and use from participant observation, ethnography and open interviews with people in Wenwuta and surrounding communities – dimensions that are at once social and ecological, sensual and psychological. The Loma term for AfDE is *tulupole* (tulu - dumpsite, pole - soil) and Loma often say that "we woke up [we were born], we saw it" The fact that the Loma call AfDE "dumpsite soil" emphasizes that they associate its formation spatially with sites of food

processing activity (towns, farm camps, palm oil pits) that produce significant amounts of waste material, rather than in say, agricultural fields. Informants recalled seeing parents nurture spontaneous (i.e. not planted) crops in *tulupole* such as *batai* (*Alocasia macrorrhiza* – a kind of taro), which we observed growing in the *tulupole* around most towns and villages in the region. People remember more varieties existing in the past, but nobody recalls it being planted intentionally. Not usually eaten, this crop became very important during the war as all other kinds of food ran out, as did other common volunteer plants in *tulupole* such as *Boerhaavia diffusa* and *Piper umbellatum* whose leaves are eaten in soups. Gayflor Zee Pewee, the old chief at Beleziau, described how *tulupole* soils have a different texture, taste and smell compared to other kinds of soil, because, according to him, of the food that has decomposed there over time. Yassa Reed, of Wenwuta, noted the softness and richness of the soil through the sensation on her hands and hoe when planting taro. Wenwuta people note the vibrancy of the plantain growing in *tulupole*, and how for this reason visitors to the town often carry off plantain seedlings to plant where they live. Each morning we witnessed women's sweeping of the yard - the bending and back-and-forth and taken-for-granted part of daily bodily routines, including gathering children's, sheep's and chicken's feces and throwing them into the kitchen garden, along with ash and charcoal. When processing palm oil or potash, or after cooking in farm huts, we observed people dumping the charred wastes around the site as an extension of the activity itself; a convenient way to get materials out of the working area. In the language of Harman, experiences like these are the *sensual qualities* through which the Loma *sensual object* "tulupole" is created.

Relationships of individual people with specific AfDE sites and trees at them are made manifest in the practice, when a baby is born, of planting kola seeds wrapped with placental cords at a site which is of ancestral significance to them. The tree is then symbolically bound to that person (alive or dead), sharing the same age, and must therefore

not be damaged lest the individual is hurt as a consequence. Similarly, mature cotton trees are said to have been planted long ago to mark graves during the burial of ancestors. We observed how after dumping in one spot for a certain amount of time (>1 year), women burn the pile and spread the ashes and char out for planting. While this *action* is certainly "intentional," the purpose, according to the women, is for crops to grow well, not to transform the soil per se, although this is a long term outcome that they are certainly aware of. Indeed, different naming and tenuring of land with AfDE, and trees planted with placentas and during burials are all intentional acts related to AfDE, but not directly related to AfDE formation itself. We now consider how these everyday, prereflexive practices over time form a habitus through which recognizable (though contingent and non-teleological) stages of anthropogenic landscape formation can be inferred.

Oral histories and the habitus of anthropogenic landscape formation

Our first account comes from the 'General Town Chief' from the town of Fasawalezu and head of a confederation of settlements including Wenwuta. Now 74 years old, he is among the most important and respected elders in the region. When young, he recalls, towns and villages had black soils around them owing to the 'dirt' (e.g. fresh/burnt organic waste) people used to throw. They planted kola, orange and banana trees in these soils. Kola used to be the most important cash crop and Mandingo traders used to come to buy it. Plantain was not planted as much as it is today, since people never used to sell it, but now it is commercialized its production in AfDE has increased. Plantain, like bush yam, had been a hunger food when rice was short before the rice harvest. The chief described how he also grew more tobacco (*Nicotiana tabacum*) and cotton (*Gossypium hirsutum*) in AfDE in the past than today, before industrial cigarettes and clothes arrived. The cultivation of coffee became popular in 1950; then people started to plant cacao on the old spots in about 1955 because they found it grew well there. According to him, Fassewalezu was founded in the

eighteenth century, when people from seven old spots united, and this is why the soil around the current town is so rich, as people have lived there for hundreds of years.

Other narratives offer perspectives that complement this chief's account. For instance the oldest man in Wenwuta, Yarkpazu, is about 90 and was town chief of Wenwuta during the Tubman era (1944-1971). He described how the town has become small. Previously the whole town was walled and packed with houses and people. The wider landscape around the town was more populous. Yarkpazu claims that "god" made the *tulupole* around the town, but the people made it fertile by dumping there; a perspective held by most of the town's women too (Frausin et al. forthcoming). People used to dump trash outside the walls and established gardens there. When he was young, banana and plantain were grown in this AfDE surrounding the town, but when he was older, cacao and coffee became important. The plantain and banana provided a buffer in times of rice scarcity. Yarkpazu recalls how they planted cotton trees when people were buried. These trees have a long life span and people can thus identify old town spots from big old cotton trees growing on them. On Wenwuta old spot (Figure 3), he recalls, they planted cotton trees, cacao and kola - it is forbidden to burn these places today because kola and cotton trees are connected to the living and the dead, respectively, as noted above.

A third informant, born about 1930, is the elder chief Gayflor Zee Pewee of Beleziau (Figure 3), a village formed by people from the Fisebu quarter of Zolowo 'before Liberian independence' (e.g. pre-1847). He was born in Zolowo, and his father brought him to Beleziau in 1950. When people arrived to settle there was no black soil but when the town was established it began to form from the 'dirt' that people threw:

> "This village has a large amount of black soil because it is very old. If you look at the black soil around a town, you can tell how old it is. If you dig a hole you can see how

514 far down the black soil goes, and this shows how old the town is. When we make a
515 farm, black soil is on the surface, not underneath. The black soil in the old spot
516 continues to form, leaves of trees fall and fertilize it."

517 Cacao, kola, oranges, plantain and breadfruit used to be planted on AfDE.

518 "I brought cacao here in 1964… when we arrived we tried planting cacao everywhere
519 but it did not grow. I planted cacao in the red soil, after 20 years it did not bear fruit. It
520 only grows in the lowland, on old town spots, and around the town. These soils are
521 fertile because of the dirt we throw, and the swamp is fertile because rain carries dirt
522 there…Kola also needs good soils to produce well, so it is good to plant it in the old
523 spot."

524 A fourth elder is Yarkparwolu, the chief of New Gbokolomie village (Figure 3). He recalls
525 when he was very young they decided to move to the current location as the old village had
526 become 'very cold' with too many trees around it such as *Terminalia superba* that had once
527 been planted as fences for goats. A 'stranger' had made a farm where the community is now
528 located, and eventually they all ended up moving there. New villages often form as people
529 move to spots where they have farms, and the village often takes the name of the founding
530 man. The old spot called Gbokolomie split into three new villages (Yakata, Wozita and New
531 Gbokolomie, see Figure 3).That New Gbokolomie was founded within living memory
532 provides those who were among its founders with unique insight into AfDE formation: a soil
533 pit dug there revealed AfDE to a depth of 80cm, suggesting its formation at 1cm a year,
534 assuming elders being 80 years old. When he settled New Gbokolomie, he explained, the soil
535 was not black like it is now. It became black from the thatch, sweeping, straw, and other
536 things people threw away. The chief's father told him that "when you plant banana you

should throw things under it." According to him charcoal and ash by-products from potash[3] production are fertilizers. His father used to tell him that when they were re-thatching houses, he should throw all the old thatch over there because "it will rot and turn the soil black." According to Yarkparwolu "we are the ones that are making the soil around the town black with all the things we are throwing …[we've been] been dumping dirt, then it rots and becomes soil and becomes rich."

Elders at four different settlements in the Wenwuta landscape thus all see AfDE formation as an inevitable consequence of settled life. This perception was also present in our full oral history dataset and was also expressed by informants during participant observation. Through their and other elders´ oral histories it is possible to read a habitus of anthropogenic landscape formation which begins with (1) the farm camp, which may remain just that, a seasonal encampment with almost continuous domestic activity for parts of the year where incipient AfDE form. Farm camps may continue to be just farm camps for decades, and even be abandoned for decades, before being cleared and occupied again. Farm camps may be permanently abandoned, though they may be planted with fruit and kola trees and become agroforests. But farm camps may eventually become permanent settlements; hamlets, and then villages. A hamlet /village (stage 2) may continue as such, be abandoned, or become a town. A town (stage 3) normally involves the incorporation of two or more "quarters" (social groups with distinct origins) linked through the *kEkE-daabe* relationship. A critical difference between town and village, at least in the past, is that towns command tenure over the surrounding area, and newcomers wanting to settle must either submit to the *kEkE-daabe* relationship, or take the area through warfare. Like villages, towns may persist thorough time,

[3] "Potash" (potassium carbonate) production from drying and then burning tree and plant remains has ancient origins in the region, and prior to industrial salt production it was produced and traded in large quantities. Even though industrial salt and sodium bicarbonate are now widely available, potash production continues; people often lack the money to purchase salt and soda, and use potash to make soap; add to sauces that are consumed with every meal; to soften leaves; and to improve digestion. The most common materials used to make potash are the seed pods from *Pentaclethra macrophylla*, *Kola nitida*, *Ceiba Pentandra*, and *Elaeis guineensis* palm fruit heads after the fruits have been removed.

559 growing or shrinking, and in the end may be abandoned (stage 4). Stage 4, old town spots,
560 can be conceived of as "sacred agroforests" (pre-1950s especially for kola, and since then for
561 cocoa and sometimes coffee), as farmers produce domesticated tree crops and conserve wild
562 tropical forest tree species in what become sacred groves where forest clearance and burning
563 are forbidden. Tenure is normally held by one man through patrilineage, in contrast to that of
564 homegardens on extant ADE which are controlled by women and children. After
565 abandonment, the old town spot may combine stage four and stage one, as a farm camp is
566 maintained at the site of the old town. While individual cases may deviate from this, most
567 settlements develop along this four step evolution.

568

569 **Recent transformations in anthropogenic landscape formation**

570

571 Liberia's devastating war (1990-2003) led to profound social and political transformations. In
572 rural areas like Wenwuta, the domestic, settlement and farming patterns changed, and so also
573 the spatialities of AfDE formation but *not* its basic habitus. Despite all the disruption, the
574 *kEkE-daabe* and associated cultural institutions continue to operate in practice and as an
575 explanatory framing. Oral histories indicate that until the latter part of the twentieth century
576 most people lived and farmed in large extended family units. Parents and grandparents
577 controlled young men's labor and chose who they were to marry and when, with tough
578 sanctions for disobedience. Each town quarter had one headman (*totuo*), each with many
579 wives and children. Below him there were six or seven "sub" chiefs, with three wives each.
580 Only the chiefs and their subs could make a farm or have wives. Therefore each town would
581 have maximum of 10-15 farms, reflecting the 10-15 men who had productive household
582 units. The town chief would make a huge farm with up to 100 men working for him. The

583 recent wars undermined such social norms, accelerating existing trends towards smaller
584 residential and farm households centered on a more 'nuclear' family associated with new
585 labor and income-earning opportunities for once-dependent women and youth. In some cases,
586 smaller households centered on marriages that followed established kinship and socio-
587 political relations, becoming a new lowest level in nested *kEkE-daabe* socio-political
588 structures. In other instances, young people married outside such expectations (see Leach
589 1994; Bledsoe 1980, for discussions in neighboring Mende and Kpelle areas).

590 In Wenwuta, people describe the war as significant to these trends in several
591 particular ways. First, people "scattered", fleeing to Guinea, to the Belle forest to the west, to
592 camps in Totota town in Bong County, or to Monrovia. Many young men joined factions in
593 the war – and many elders, especially men, were intentionally targeted and killed. In
594 combination, the decimation of elders and the independence of youth meant that on their
595 return to Wenwuta and other towns, young men lived and farmed independently of those to
596 whom they would once have been subject. Second, as food in refugee camps was allocated
597 per family, people used to form smaller groups to get more food, helping to create nuclear
598 families. A net effect was to create an emboldened youth who "have less respect for the
599 chiefs or elders." This in turn had an effect on AfDE production, as several elders noted and
600 explained. With more productive units, so there are more sites of production: more gardens
601 are made, more farms are cleared, and there are more sites at which palm oil is produced.
602 This reflects the new reality that each family unit is free to make its own garden, farm and oil,
603 to meet its market and subsistence needs, whereas before each settlement only had a few
604 productive units. This multiplied the number of places in the landscape at which charred and
605 organic materials are dumped, and hence AfDE is now produced at many smaller sites, rather
606 than a few larger ones. There may also be greater AfDE production overall now, both through
607 greater productive activity relative to overall population size (elders emphasize that the old,

large farms rarely produced enough to feed their labor force), and through an increase in the sheer number of cooking and oil production fires.

Thirdly, the war contributed to the shifting of kitchens out of the town into the bush, and hence a spatial change in the production of AfDE. As one Wenwuta elder, Garmazumo explains:

> "We put the kitchens out of the town after the war [began] because in the war soldiers came and forced people to beat rice, or burned it. Before the war all kitchens were in town, only those people who worked far away had kitchens there. Before the war most people used to cook in the town. Now it is more common for people to cook on the farm some days of the week. Some families never cook in town."

Locating kitchens and rice stores out of town also makes sense for smaller households with less labor availability per farm to haul rice into town. The shift of kitchens, AfDE production, and homegardens into the bush is helpful since homegarden space in the town is increasingly circumscribed, by the expanding town on one hand, and the forest island around the town on the other, which contains sacred areas that cannot be felled. In the bush, families have more space for homegardens, and there are no goats and sheep, which nowadays makes the cultivation of vegetables in town difficult. In the modern period, families still access land through claims based on past land use by ancestors.

The recent war has thus affected AfDE formation, contributing to the reduction in size and therefore multiplication of farm-household units, and shifts in a significant proportion of the activities through which AfDE are produced out from the town into the bush. This implies that current and near-future trajectories of anthropogenic landscape formation will involve a decrease in AfDE formation around towns while AfDE formation in the bush is likely to increase. However, we saw no evidence that the war disrupted or dissolved the *kEkE-daabe*

relationship; its practices seemed to be alive and well in Wenwuta, despite changes in household size, age and power.

Discussion and Conclusions

We have shown that persistence and change in AfDE and anthropogenic landscape formation are experienced and explained by the Loma as the inevitable outcome of everyday life and political and social factors, rather than as intentional processes of soil enrichment. The patterning of AfDE and anthropogenic landscape formation is driven by political-economic factors mediated by social institutions of firstcomer-latecomer and *kEkE-daabe* which bind diverse groups of people together as kin, make them culturally resilient and move them to different spots of the land for different amounts of time and at different densities. We showed this by combining a HE account of the continuities and changes in anthropogenic landscape formation with a PE understanding of the institutions, social relations and politics shaping that history. We have used this to reveal the pre-reflexive background to the practices leading to anthropogenic landscape formation and have explored how people experience them, drawing on non-representational theory. We found that the distribution of anthropogenically-enriched soils and vegetation is less the summation of 'past intentional investments' than an inheritance; an outcome of the way ancestors lived (and their habitus), and reciprocally (dialectically) of the way their living shaped environmental affordances and economic opportunities (e.g. making infertile land suitable for homegardens and tree cropping).Drawing on Harman's work we conceptualize AfDE as a Loma sensual object *tulupole* made up of the shifting sensual qualities that people experience vis-à-vis *dump-site-soil* from when they "wake up" (are born), and engage with it through daily activities

656 throughout their lives. The intensive deposition of waste material happens in places where
657 waste is produced (e.g. in the town, at palm oil pits, and at farm kitchens) as an extension of
658 activities or, over time, habitus, that produce waste (cooking, processing palm, etc.). *Tulupole*
659 is located at current or abandoned dumpsites around domestic areas of settlements and farm
660 camps but is *not* a practice the Loma intentionally go and perform in areas that they perceive
661 to be lacking in fertility. While there may be individual choice and intent, and whilst there is
662 certainly reflective knowledge about the processes, these are perceived within a wider set of
663 social and cultural practices and institutions that shape the process. Given the temporal
664 continuity in subsistence technologies that produce AfDE amongst Loma (Frausin et al.
665 forthcoming), we can conclude that the spatial distribution and intensity of AfDE production
666 at the landscape level are shaped by changes in political-economy which affect the size,
667 duration and location of the domestic units that produce AfDE, rather than changes in
668 technology and habitus *per se*.

669 The cumulative outcome of these settlement trajectories, which inevitably produce
670 AfDE and suites of anthropogenic vegetation at loci of inhabitation, is a palimpsest landscape
671 reflecting changes in inhabitation shaped by social and political processes. The importance of
672 the *kEkE-daabe* relationship to social organization in the region shows how a politics of
673 kinship has shaped historical ecologies, i.e. dynamics of settlement processes have created
674 AfDE and associated suites of vegetation, which encipher social relations in that they embody
675 wife giver-receiver relationships that allowed strangers to settle land through creating kinship
676 with those already there. These relationships mediate land tenure through time, and access to
677 anthropogenic landscapes which contain assets that represent both symbolic (ancestors'
678 personhood in graves, sacred spaces and trees) and economic (fertile soils, tree crops) capital.
679 While political-ecological changes re-shape the spatialities of anthropogenic landscape
680 formation and the specific power relations amongst people and groups the basic

characteristics of AfDE and anthropogenic forest formation itself have persisted, owing to the resilience of subsistence habitus and cultural institutions.

While the formation of anthropogenic landscapes involves both purposeful and unintentional human action, its distribution, intensity and duration are shaped by the effects of politics, warfare, and social transformation on population density and household units within the landscape. We conclude therefore that the formation of anthropogenic soils and vegetation in both West Africa and Amazonia, today and in the past, are not determined primarily by "intentional technologies" as some historical ecologists hold, but nor is it entirely 'unintentional'. Rather it is shaped by settlement and mobility patterns that are driven by socio-cultural, political and historical processes. People experience AfDE not as the outcome of their intentions but rather as the sensual object *tulupole* which is the summation of sensual qualities they experienced through their interactions with these soils (and the activities that make them) throughout their lives. AfDE forms through practices that are therefore better thought of as a *pre-reflexive background* in terms of immediate experience and a *habitus* in terms of this experience over time. This article exemplifies the merit of a political-historical ecology combined with insights from elements of non-representational theory in revealing the factors which perpetuate anthropogenic landscape formation through time and space, contextualizing how the Loma experience this process and the habitus that emerges from it, and in questioning the extent of 'intentionality' in natural resource management.

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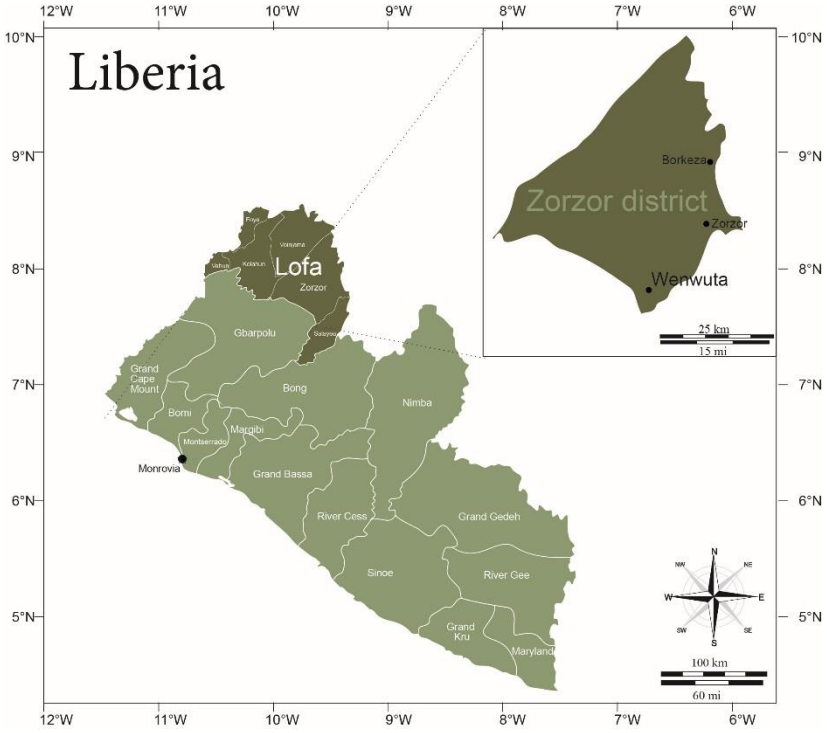

876

877 **Figure 1** Map of Liberia showing all fifteen counties, with Lofa, the location of indepth

878 fieldwork, inset showing districts and fieldwork location. Map by Victoria Frausin

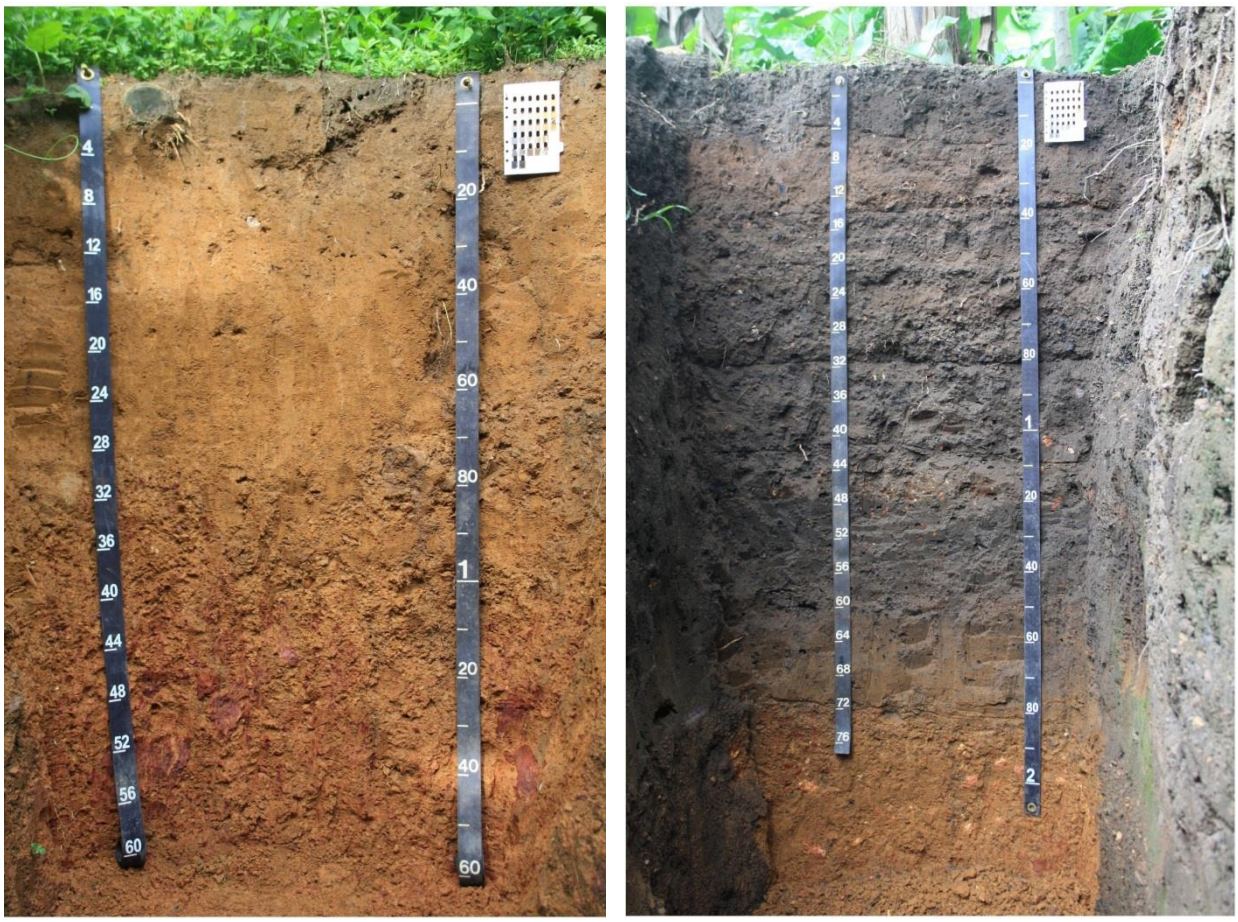

Figure 2: Wenwuta Profiles: Left, Oxisol, Right, Anthrosol (1m80cm deep). Oxisols are typical of the uplands of the region, which are very homogenous and with little variability. Apart from the lack of ceramics, the profile is analogous to Amazonian *terra preta*.

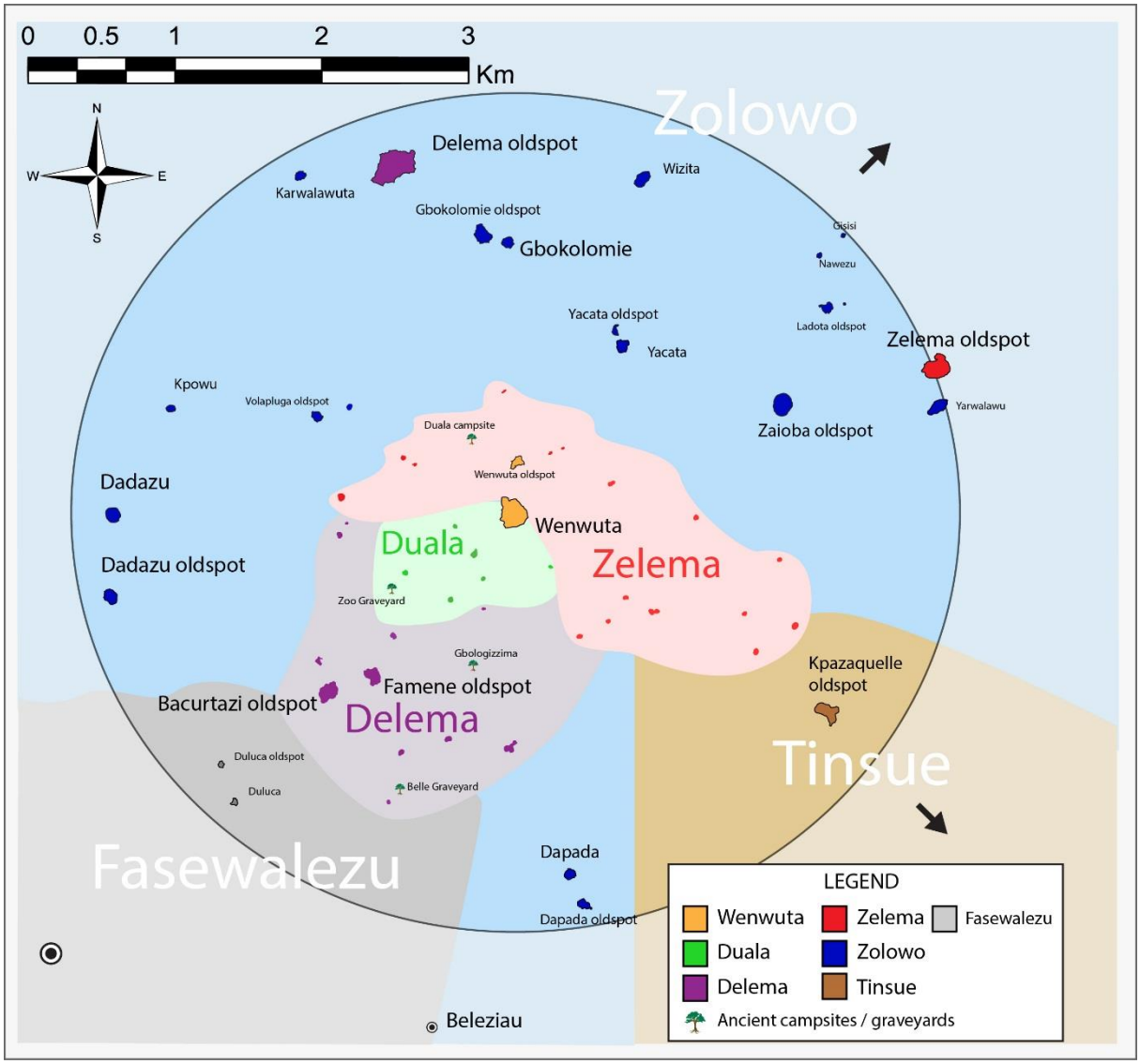

Figure 3. The Wenwuta Landscape. This figure was generated from GPS data from participatory mapping, field observations and oral histories. Colored sites with black outlines represent current towns or old town spots (indicated with labels), while smaller colored dots without outlines are kitchen sites. The shapes were generated from GPS tracks made by walking around the edges of the AfDE at each site. Different colors show the sites associated with different towns or town quarters. Colored backgrounds are the estimated extent of town or town quarter farmland, extrapolated from mapping of kitchen sites and boundary waypoints.